

# Quick guide

## JDS8000 series function/arbitrary wave signal generator

Please read the Quick Guide and Instruction Manual carefully before using the product. This guide introduces the necessary knowledge, basic operations, etc. to start using this product. For detailed instructions, refer to the "User Manual" (electronic version).



"User Manual" (electronic version)

[http://68.168.132.244/JDS8000/Manual\\_EN\\_ZX.pdf](http://68.168.132.244/JDS8000/Manual_EN_ZX.pdf)



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## I /▲ Basic operation

### 1.Panel Description

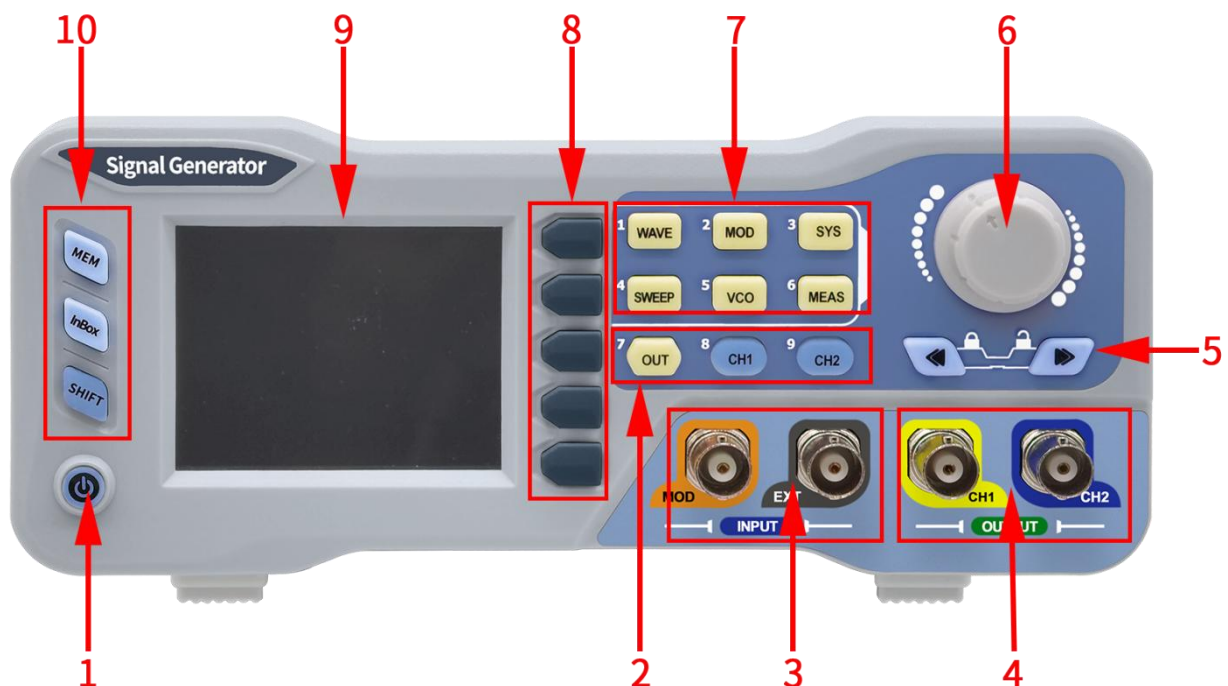


Figure 1-1-1 JDS8000 series front panel diagram

Table 1-1-1 JDS8000 series front panel diagram instructions

Item	Description	Item	Description
1	Power switch	6	Knob
2	Channel Control Keypad	7	Function shortcut keys
3	Signal input connector	8	Function soft keys
4	Signal output connector	9	LCD
5	Arrow key	10	Shortcut keys

### (1) Power switch

Used to turn the signal generator on or off.

### (2) Channel Control Keypad

#### ➤ CH1 button

Output switch for controlling CH1.

Press the CH1 button, the CH1 channel indicator lights up, and the CH1 output is enabled. At this time, the CH1 connection port outputs the signal with the current configuration.

Press the CH1 button again, the CH1 channel indicator is off, and at this time, the CH1 output is turned off. When the input box is open, it is the number key 8.

#### ➤ CH2 button

Output switch for controlling CH2.

Press the CH2 button, the CH2 channel indicator lights up, and the CH2 output is enabled. At this time, the CH2 connection port outputs the signal with the current configuration.

Press the CH2 button again, the CH2 channel indicator is off, and at this time, the CH2 output is turned off. When the input box is open, it is the number key 9.

#### ➤ OUT button

Output switch for simultaneously controlling CH1 and CH2. When the input box is enabled, it is the number key 7.

### (3) Signal input connector

#### ➤ EXT.IN signal input connector

Input signal voltage range 1Vpp~20Vpp

#### ➤ MOD.IN modulation input connector

Input signal voltage range 0Vpp~3Vpp

### (4) Signal output connector

#### ➤ CH1 output connection port

BNC connection port, the output impedance is  $50\Omega \pm 10\%$  (typical).

When the CH1 indicator is on, it means that the connection port outputs the waveform with the current configuration parameters.

#### ➤ CH2 output connection port

BNC connection port, the output impedance is  $50\Omega \pm 10\%$  (typical).

When the CH2 indicator is on, it means that the connection port outputs the

waveform with the current configuration parameters.

### (5) Arrow keys

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When setting parameters, it is used to move the cursor to select the digit to be edited.

When using the input box to input parameters, the left button is used to delete the number to the left of the cursor, and the right button is used to delete all numbers.

Press the left arrow key and hold to lock the key, and press the right arrow key and hold to release the key lock.

### (6) Knob

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Use the knob to set parameters to increase (clockwise) or decrease (counterclockwise) the value at the current cursor.

When the waveform bar is activated, the adjustment buttons can quickly switch wave forms.

A quick press of the knob can be used as the OK key.

Press the knob and hold to quickly save the parameter to the M00 position.

### (7) Function shortcut keys

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#### ➤ **【WAVE】 key**

Press the **【WAVE】** key on the front panel to activate the waveform switching of the current channel. When the waveform bar is activated, adjusting the knob can quickly switch wave forms. Press the direction keys to quickly switch between arbitrary wave forms and preset wave forms. At the same time, common wave forms such as sine wave, square wave, pulse wave and ramp are displayed on the right side of the screen. Press the corresponding soft key to quickly select. When the input box is open, it is the number key 1.



As the **【WAVE】** key is in the main interface, it can be used as a waveform key. In other interfaces, press the **【WAVE】** key to return to the main interface. For example, press the **【MOD】** key in the main interface to enter the modulation interface. Press the **【WAVE】** key in the modulation interface to return to the main interface; however, to enter other interfaces from the modulation interface and return to the main interface again, you need to press the **【WAVE】** key twice to return to the modulation interface first and then return to the main interface.

#### ➤ **【MOD】 Key**

For quick switching between modulation mode interface and main interface. Press the **【MOD】** key to enter the modulation mode. In the modulation mode interface, press the **【Type】** soft key to perform AM, FM, PM, ASK, FSK, PSK, Pulse, burst and other functions to switch between each other by rotating the encoder or pressing the direction keys. When the input box is open, it is the number key 2.

#### ➤ **【SYS】 Key**

For quick switching between the system setting interface and the main interface.

Press the **【SYS】** key to enter the system setting interface, press the **【PgDn】** soft key to enter the next page of the system setting interface, press the   soft keys to select clear storage, sound, brightness, language, built-in wave number ,

arbitrary wave number, waveform loading method, synchronization, frequency fine-adjusting, factory reset and other items. When the input box is open, it is the number key 3.

➤ **【SWEEP】 Key**

For quick switching between the sweep mode interface and the main interface.

Press the **【SWEEP】** key to enter the sweep frequency interface, press the **【Func】** soft key, and then use the corresponding soft key to switch between the sweep frequency, sweep amplitude and sweep duty functions. When the input box is open, it is the number key 4.

➤ **【VCO】 Key**

For quick switching between voltage control mode interface and main interface.

Press the **【VCO】** key to enter the voltage control frequency interface, press the **【Func】** soft key and then use the corresponding soft key to switch between the functions of frequency control, amplitude control and duty control. When the input box is open, it is the number key 5.

➤ **【MEAS】 Key**

For quick switching between measurement mode interface and main interface.

Press the **【MEAS】** key, and then press the **【Cnt】** and **【Meas】** soft keys in the measurement mode interface to switch between the measurement function and the counting function. When the input box is open, it is the number key 6.

## (8) Function soft keys

Corresponding to the menu on the right side of its screen, pressing this soft key activates the corresponding menu.

When the input box is turned on, the menu on the right side of the screen corresponds to 0, ., +/-, confirm, and exit.

## (9) LCD

The 2.8-inch TFT color LCD display shows the menu and parameter settings of the current function.

## (10) Shortcut keys

➤ **【MEM】 Key**

Press the **【MEM】** button, the message box or pop-up box will display and recall M00, and at the same time enter the input box function, you can press the number key + OK button to recall the parameters; press the **【SHIFT】 + 【MEM】** button, the information box display save M00, you can press the number key + OK key to save the parameters.

➤ **【InBox】 Key**

Press the **【InBox】** button, and the corresponding pop-up window will appear on the screen. For example, when the cursor is in the frequency setting, the **【InBox】** button will jump out of the pop-up window for inputting the frequency value. At this time, the rotating the knob can select the corresponding unit, and the input box is turned on. At the same time, the left side of the menu soft key also corresponds to 0, ., +/-, confirm, and exit.

➤ **【SHIFT】 Key**

To obtain the help information of a front panel key or menu soft key, after pressing the key, press the key for which you need to get help message.

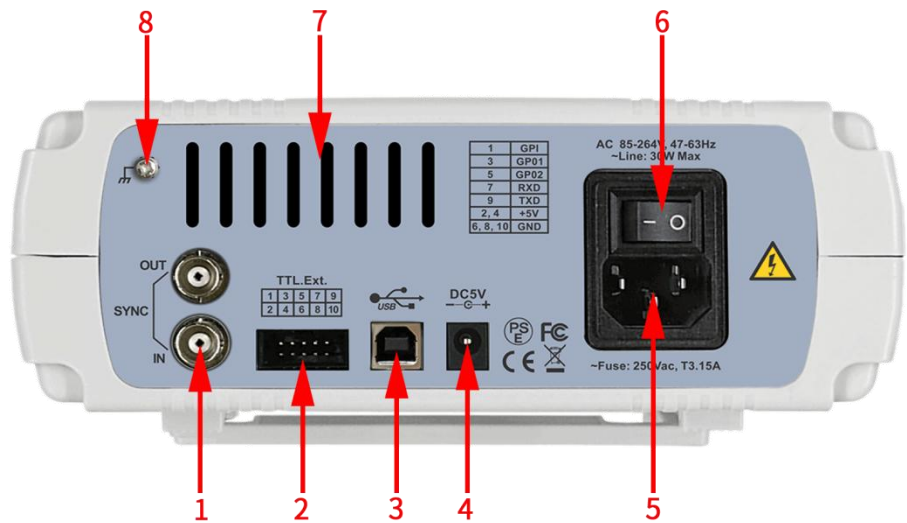


Figure 1-1-2 JDS8000 series rear panel  
Table 1-1-2 JDS8000 series rear panel diagram instructions

No.	Introduction	No.	Introduction
1	Sync connector	5	AC power socket
2	Extended interface	6	Switch
3	USB	7	Vents
4	DC power socket	8	Grounding terminal

**2.Display interface description**

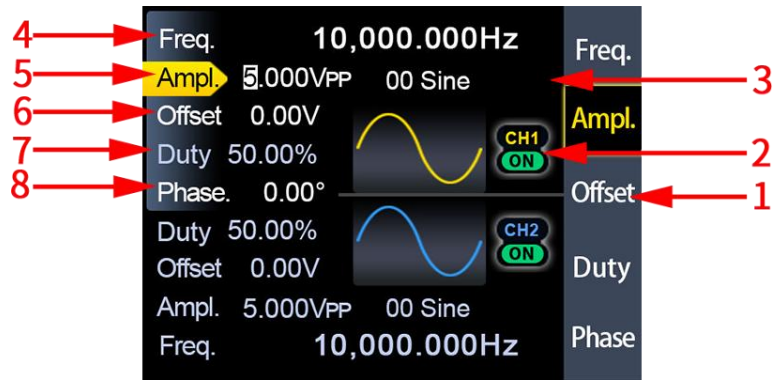


Figure 1-2-1 JDS8000 series display interface diagram  
Table 1-2-1 JDS8000 series display interface diagram instructions

No.	Introduction	No.	Introduction
1	Soft key menu bar	5	Amplitude
2	Current channel output status	6	Offset
3	Waveform display	7	Duty cycle
4	Frequency	8	Phase

## 1. Waveform output

The dual channels of the JDS8000 series function/arbitrary wave signal generator can independently output the same or different waveforms (including sine wave, square wave, triangle wave, pulse wave and custom arbitrary waveform, etc.). When powered on, the default configuration of the dual channel is a sine wave with a frequency of 10kHz and an amplitude of 5Vpp. The instrument can be adjusted to output different wave forms.

The waveform interface is shown in Figure 2-1-1 below.

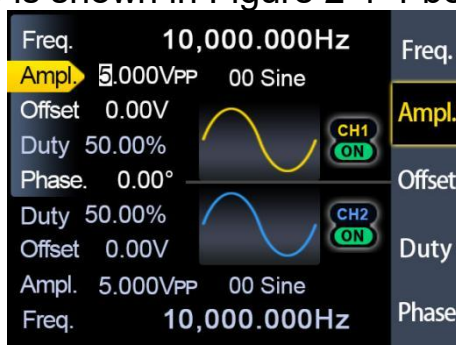


Figure 2-1-1 Waveform interface



### (1) Select output channel

Press the channel control key **【CH1】** to select CH1. At this time, the text in the CH1 part of the interface is displayed in white, and the text in the CH2 part is displayed in gray. Click the soft key on the right side of the screen, and the font in the menu bar will be displayed in yellow.

Press **【CH2】** key to select CH2. At this time, the text in the CH1 part of the interface is displayed in gray, and the text in the CH2 part is displayed in white. Click the soft key on the right side of the screen, and the menu bar font will be displayed in blue.

### (2) Select waveform

Press the **【WAVE】** key, the soft key menu bar on the right side of the screen displays the waveform, press the waveform soft key or use the knob to change the waveform to output the desired waveform.

### (3) Set frequency

Press the soft key **【Freq】** to highlight “Frequency”. At this time, you can press the **【InBox】** key to input the value of the desired frequency, and then you can use the knob to select the unit of frequency. You can also use the direction keys and knob to set the value of the parameter: use the direction key to move the cursor to select the digit to be edited, and then rotate the knob to modify the value to adjust the frequency to the desired frequency.

### (4) Set amplitude



Press the soft key **【Ampl】** to make “Amplitude” highlighted. At this time, you can press the **【InBox】** key to input the desired amplitude value. The amplitude range is limited by the frequency setting. The higher the frequency, the smaller the output amplitude range. For the specific range of amplitude setting, please refer to the technical parameter table in the electronic version of the manual.

#### (5) Set offset

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Press the soft key **【Offset】** to make “Offset” highlighted. Use the direction keys and the knob or press the **【InBox】** key to input specific values in the input box to adjust the parameters, so that the offset is set to the desired value. The amplitude range is affected by the offset setting, the larger the offset, the smaller the amplitude range. When the waveform selects the DC level, the offset is the voltage value of the DC level (the amplitude cannot be 0). Please refer to the technical parameter table in the electronic manual for the specific adjustment range.

#### (6) Set duty cycle

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The sine wave and square wave cannot adjust the duty cycle, and the duty cycle will be displayed in gray-yellow on the screen. Bias sine wave and pulse wave can adjust the duty cycle.

Press the **【Duty】** soft key to make the “Duty” highlighted. Use the direction keys and the knob or press the **【InBox】** key to input specific values in the input box to adjust the parameters. The default duty cycle is 50%. The waveform is switched to pulse wave, and the duty cycle is continuously adjustable from 0.01 to 99.99%.

#### (7) Set phase

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Press **【CH2】** key to select CH2, at this time, the blue interface of CH2 is mainly displayed at the lower part of the screen.

On the CH2 interface, press the **【Phase】** soft key to highlight “Phase”, and use the direction keys and the knob or press the **【InBox】** key to input specific values in the input box to adjust the parameters. The default phase difference is 0.00°. Before setting the phase difference, please set the frequency synchronization of CH1 and CH2 in the system settings.

#### (8) Observe the output waveform

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Use BNC cable to connect CH1 and CH2 of JDS8000 machine to the oscilloscope and observe the waveform of the oscilloscope. It is recommended to use our standard Q9-Q9 cable to test the square wave, with small overshoot and stable waveform.

#### (9) Loading and save

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Short press the **【MEM】** button, the message box or pop-up box will display to load M00, and at the same time enter the input box function, you can press the number keys to input the position to be loaded (00-99 in total 100 positions) and then press the OK key to adjust out parameters.

Press **【SHIFT】 + 【MEM】** key, save M00 is displayed in the message box,

you can press number key+OK key to save the parameter.

## 2.Modulation mode interface parameter setting

The JDS8000 series can output modulated waveforms in one or two channels. Modulation is the process of processing the information of the signal source and adding it to the carrier to make it into a form suitable for signal transmission. It is the technology of making the carrier change with the signal. The carrier can be sine wave, square wave, pulse wave, arbitrary wave (except DC). The modulated wave can come from an internal modulation source or an external modulation source. The modulation types supported by the JDS8000 series include AM, FM, PM, ASK, FSK, PSK, Pulse and Burst.

The modulation interface is shown in Figure 2-2-1 below.



Figure 2-2-1 Modulation interface

### (1) AM

Amplitude modulation is a modulation method in which the amplitude of the carrier wave changes according to the changing law of the required transmission signal, but the frequency remains unchanged.

#### ➤ Choose the carrier waveform

The carrier waveform of amplitude modulation can be sine wave, square wave, sawtooth wave or arbitrary wave (except DC), the default is sine wave.

In the waveform interface, press **【Shape】** to select the desired carrier waveform through the knob. DC in pulse wave, noise wave and arbitrary wave cannot be used as carrier. Different settings of several parameters of the carrier waveform (such as frequency, amplitude, offset and start phase, etc.) will affect the output AM modulated waveform. For different carrier wave forms, the setting range of each parameter of the carrier is also different (related to the instrument model you use and the selected carrier waveform).

For the setting method of carrier parameters, please refer to the relevant introduction in the section "Output Basic Waveform".

#### ➤ Select AM

Press **【MOD】** →press **【Type】** →select AM by adjusting knob or pressing direction keys.

#### ➤ Select signal source

The JDS8000 series can accept modulation wave forms from internal or external modulation sources.

Press **【Source】** to select "Internal" or "External" modulation source.



- Internal

After selecting the internal modulation source, press the **【Shape】** soft key to select sine wave, square wave, triangle wave, ramp-up, ramp-down and arbitrary wave as the modulation source. Default is sine wave.

- External

When the external modulation source is selected, the signal generator receives the external modulation signal input from the MOD connector on the front panel.

The frequency range of the external signal is 20Hz~20kHz, and the amplitude range is -5V~+5V.

- Set modulation wave frequency and carrier frequency

Press the soft key **【Mod.F】**, when the frequency is on, you can set the frequency of the modulating wave, press the soft key **【Carr.F】** again, the carrier frequency is on, you can set the frequency of the carrier wave. (The modulating wave frequency can only be used after using the "internal" modulation source)

Use the **【InBox】** button to input the desired frequency value in the input box.

The modulation frequency range is 0.001Hz to 1MHz, and the default is 500Hz.

- Set modulation depth

Modulation depth indicates the degree of amplitude change, expressed as a percentage. The AM modulation depth can be set from 0% to 200%. Press **【Depth】** soft key to set AM modulation depth.

## (2) FM

The modulation method in which the carrier frequency is changed according to the modulating signal is called frequency modulation. The magnitude of the frequency change of the modulated waveform is determined by the magnitude of the modulating signal, and the period of change is determined by the frequency of the modulating signal.

- Choose the carrier waveform

Refer to "Selecting Carrier Waveform" in "Amplitude Modulation". DC in pulse wave, noise wave and arbitrary wave cannot be used as carrier.

- Select FM

Press **【MOD】** →press **【Type】** →select FM by adjusting the knob or pressing direction keys.

- Select signal source

The JDS8000 series can accept modulation wave forms from internal or external modulation sources.

Press **【Source】** to select "Internal" or "External" modulation source.

- Internal

After selecting the internal modulation source, press the **【Shape】** soft key to select sine wave, square wave, triangle wave, ramp-up, ramp-down and arbitrary wave as the modulation source. Default is sine wave.

- External

When the external modulation source is selected, the signal generator receives the external modulation signal input from the MOD connector on the front panel.

The frequency range of the external signal is 20Hz~20kHz, and the amplitude range is -5V~+5V.

- Set modulation wave frequency and carrier frequency

Press the soft key **【Mod.F】**, when the frequency is on, you can set the frequency of the modulating wave, press the soft key **【Carr.F】** again, the carrier frequency is on, you can set the frequency of the carrier wave. (The modulating wave frequency can only be used after using the "internal" modulation source)

Use the **【InBox】** button to input the desired frequency value in the input box.

The modulation frequency range is 0.001Hz to 1MHz, and the default is 500Hz.

- Set frequency deviation

Frequency deviation refers to the deviation of the frequency of the modulating waveform relative to the carrier frequency. Press **【F.Dev】** soft key to set FM frequency offset.

### (3) PM

The modulation method in which the deviation of the phase of the carrier from its reference phase is proportional to the instantaneous value of the modulating signal is called phase modulation or called PM.

- Choose the carrier waveform

Refer to "Selecting carrier waveform" in "amplitude modulation".

DC in pulse wave, noise wave and arbitrary wave cannot be used as carrier.

- Select PM

Press **【MOD】** →press **【Type】** →select phase modulation by adjusting the knob or pressing direction keys.

- Select signal source

The JDS8000 series can accept modulation wave forms from internal or external modulation sources.

Press **【Source】** to select "Internal" or "External" modulation source.

- Internal

After selecting the internal modulation source, press the **【Shape】** soft key to select sine wave, square wave, triangle wave, ramp-up, ramp-down and arbitrary wave as the modulation source. Default is sine wave.

- External

When the external modulation source is selected, the signal generator receives the external modulation signal input from the MOD connector on the front panel.

The frequency range of the external signal is 20Hz~20kHz, and the amplitude range is -5V~+5V.

➤ Set modulation wave frequency and carrier frequency

Press the soft key **【Mod.F】**, when the frequency is on, you can set the frequency of the modulating wave, press the soft key **【Carr.F】** again, the carrier frequency is on, you can set the frequency of the carrier wave. (The modulating wave frequency can only be used after using the "internal" modulation source)

Use the **【InBox】** button to input the desired frequency value in the input box.

The modulation frequency range is 0.001Hz to 1MHz, and the default is 500Hz.

➤ Set the modulation wave phase deviation

Phase deviation refers to the change in the phase of the modulating waveform relative to the carrier phase. Press the soft key **【P.Dev】** to set the phase deviation of phase modulation.

Use the **【InBox】** button to input the desired deviation value in the input box.

The phase deviation can be set from 0° to 359.99°, with a default value of 180°.

#### (4) ASK

The modulation method in which the amplitude variation of the carrier is controlled by the baseband digital signal is called Amplitude Shift Keying (ASK), also known as digital amplitude modulation.

➤ Select the carrier waveform

Refer to "Selecting carrier waveform" in "Amplitude modulation".

DC in pulse wave, noise wave and arbitrary wave cannot be used as carrier.

➤ Select ASK

Press **【MOD】** →press **【Type】** →select ASK by adjusting the knob or pressing direction keys.

➤ Set the polarity

Press the soft key **【Polar】** to select the amplitude output controlled by the "positive polarity" or "negative polarity" of the modulating wave.

● Internal

During internal modulation, if the polarity is set to "positive polarity", when the modulating wave is logic low level, the smaller amplitude between the carrier amplitude and the modulation amplitude is output; when the modulating wave is logic high level, the output carrier amplitude and the larger amplitude between the modulation amplitude. When the polarity is "Negative", the opposite is true.

● External

During external modulation, if the polarity is set to "positive polarity", when the external input signal is logic low level, the smaller amplitude between the carrier amplitude and the modulation amplitude is output; when the external input signal is logic high level, the output The larger amplitude between the carrier amplitude and the modulation amplitude. When the polarity is "Negative", the opposite is true.

➤ Select signal source

The JDS8000 series can accept modulation wave forms from internal or external

modulation sources.

Press **【Source】** to select "Internal" or "External" modulation source.

- Internal

Select the internal modulation source, that is, select a square wave with a duty cycle of 50% as the modulation waveform. At this point, the frequency at which the output amplitude shifts between the carrier amplitude and the modulation amplitude is determined by the modulation rate.

- External

When the external modulation source is selected, the signal generator accepts the external modulation signal input from the MOD port on the front panel.

The frequency range of the external signal is 20Hz~20kHz, and the amplitude range is -5V~+5V.

➤ Set modulation rate and carrier frequency

Press the soft key **【Rate】**, when the frequency is on, you can set the rate of the modulating wave, press the soft key **【Carr.F】** again, the carrier frequency is on, you can set the carrier frequency. (The modulation rate is only available after using the "internal" modulation source)

Use the **【InBox】** button to input the desired frequency value in the input box. The frequency range is 0.001Hz to 1MHz, the default is 500Hz.

➤ Set ASK amplitude

Press **【Ampl】** soft key to set the ASK amplitude.

Use the **【InBox】** key to input the desired amplitude value in the input box. The range of ASK range is 0%-200%, and the default is 80%.

## (5) FSK

The modulation method in which the carrier frequency is controlled by a digital signal is called frequency shift keying (FSK).

➤ Select the carrier waveform

Refer to "Selecting Carrier Waveform" in "Amplitude Modulation". DC in pulse wave, noise wave and arbitrary wave cannot be used as carrier.

➤ Select FSK

Press **【MOD】** →press **【Type】** →select the key frequency by adjusting the knob or pressing direction keys.

➤ Set the polarity

Press the soft key **【Polar】** to select the amplitude output controlled by the "positive polarity" or "negative polarity" of the modulating wave.

- Internal

During internal modulation, if the polarity is set to "positive polarity", the carrier frequency will be output when the modulating wave amplitude is a logic low level, and the hopping frequency will be output when the modulating wave amplitude is a logic high level. When the polarity is "Negative", the opposite is true.

- External

During external modulation, if the polarity is set to "positive polarity", when the external input signal is logic low level, the carrier frequency is output; when the external input signal is logic high level, the hopping frequency is output. When the polarity is "Negative", the opposite is true.

- Select signal source

The JDS8000 series can accept modulation wave forms from internal or external modulation sources.

Press **【Source】** to select "Internal" or "External" modulation source.

- Internal

Select the internal modulation source, that is, select a square wave with a duty cycle of 50% as the modulation waveform. At this point, the frequency at which the output amplitude shifts between the carrier amplitude and the modulation amplitude is determined by the modulation rate.

- External

When the external modulation source is selected, the signal generator accepts the external modulation signal input from the MOD port on the front panel.

The frequency range of the external signal is 20Hz~20kHz, and the amplitude range is -5V~+5V.

- Set modulation rate and carrier frequency

Press the soft key **【Rate】**, when the frequency is enabled, you can set the rate of the modulating wave, press the soft key **【Carr.F】** again, the carrier frequency is on, you can set the carrier frequency. (The modulation rate is only available after using the "internal" modulation source)

Use the **【InBox】** button to input the desired frequency value in the input box.

The frequency range is 0.001Hz to 1MHz, the default is 500Hz.

- Set hopping frequency

Press **【Hop.F】** soft key to set the hopping frequency.

Use the **【InBox】** button to input the desired frequency value in the input box.

## (6) PSK

Phase Shift Keying (PSK): A modulation technique in which the phase of the carrier is used to represent the information of the input signal. Definition of Phase Shift Keying: Time Discrete

Each characteristic state of the modulated signal is modulated by an angle represented by a specific difference between the phase of the modulated signal and the phase of the carrier before modulation.

- Choose the carrier waveform

Refer to "Selecting carrier waveform" in "Amplitude modulation".

DC in pulse wave, noise wave and arbitrary wave cannot be used as carriers.

- Select PSK

Press **【MOD】** →press **【Type】** →select key phase by adjusting knob or pressing direction keys.

➤ Set the polarity

Press the soft key **【Polar】** to select the amplitude output controlled by the "positive polarity" or "negative polarity" of the modulating wave.

During internal modulation, if the polarity is set to "positive polarity", when the amplitude of the modulating wave is logic low level, the carrier phase is output; when the amplitude of the modulating wave is logic high level, the modulation phase is output. When the polarity is "Negative", the opposite is true.

During external modulation, if the polarity is set to "positive polarity", when the external input signal is logic low level, the carrier phase is output; when the external input signal is logic high level, the modulation phase is output. When the polarity is "Negative", the opposite is true.

➤ Select signal source

The JDS8000 series can accept modulation wave forms from internal or external modulation sources.

Press **【Source】** to select "Internal" or "External" modulation source.

● Internal

Select the internal modulation source, that is, select a square wave with a duty cycle of 50% as the modulation waveform. At this point, the frequency at which the output amplitude shifts between the carrier amplitude and the modulation amplitude is determined by the modulation rate.

● External

When the external modulation source is selected, the signal generator accepts the external modulation signal input from the MOD port on the front panel.

The frequency range of the external signal is 20Hz~20kHz, and the amplitude range is -5V~+5V.

➤ Set modulation rate and carrier frequency

Press the soft key **【Rate】**, when the frequency is on, you can set the rate of the modulating wave, press the soft key **【Carr.F】** again, the carrier frequency is on, you can set the carrier frequency. (The modulation rate is only available after using the "internal" modulation source)

Use the **【InBox】** button to input the desired frequency value in the input box. The frequency range is 0.001Hz to 1MHz, the default is 500Hz.

➤ Set PSK phase

Press the soft key **【Phase】** to set the PSK phase.

Use the **【InBox】** button to input the desired phase in the input box.

The PSK phase range is 0° to 359.99°.

## (7) Pulse function

The digital adjustment of the pulse width and pulse cycle time of the pulse wave can be realized, which is more accurate than adjusting the duty cycle.



- Choose the carrier waveform  
The pulse modulated waveform can only be a pulse wave.
- Select pulse  
Press **【MOD】**→press **【Type】**→select pulse by adjusting the knob or pressing direction keys.
- Set wave reverse  
Press **【W.Inv】** soft key, you can choose normal or invert to control the output.
- Set the pulse width  
Press **【Width】** soft key to set the pulse width  
Use the **【InBox】** button to input the required value in the input box (units can be us, ms, s).  
The pulse width ranges from 0.001us to 4s, and the default is 0.100us.
- Set the pulse period  
Press soft key **【Period】** to set the pulse period.  
Use the **【InBox】** button to input the required value in the input box (units can be us, ms, s).  
The period length ranges from 0.01us to 40s, and the default is 10.00us.

## (8) Burst function

The pulse train of 1-1048575 periods can be set to output, and the burst mode is divided into internal trigger, external input signal trigger (rising edge trigger) and manual trigger. In use, it should be noted that the cycle time of the burst pulse train is less than the cycle time of the burst signal.

- Select the carrier waveform  
Refer to "Selecting Carrier Waveform" in "Amplitude Modulation".
- Select Burst  
Press **【MOD】** →press **【Type】** →select burst by adjusting the knob or pressing direction keys.
- Set idle mode  
Press **【Idle】** soft key, zero position, positive maximum and negative maximum control output can be selected.
- Select trigger source  
Press soft key **【T.Src】** to select trigger mode.
  - Key  
Key trigger: It can be output once by pressing the **【Trig.】** soft key.
  - Internal

Internal trigger: It can be triggered by the falling edge of the CH2 signal of the signal generator.

- External AC

External AC signal trigger

- External DC

External DC signal trigger

➤ Set the number of pulses

Press soft key **【Num.】** to set the number of pulses.

Use the **【InBox】** key to input the desired number of pulses in the input box.

The number of pulses ranges from 1 to 1048575, and the default is 1.

### 3.Parameter settings in the sweep mode interface

Press **【SWEEP】**, and then press the **【Func】** soft key in the frequency sweep mode interface to select the frequency sweep, amplitude sweep and sweep duty cycle functions. The frequency sweep interface is shown in Figure 2-3-1 below.



Figure 2-3-1 Frequency sweep interface

#### (1) Sweep frequency

➤ Sweep channel

The cursor is on the sweep channel, and the knob can be used to switch the sweep channel.

➤ Start frequency and stop frequency

The start frequency and the stop frequency are the upper and lower frequency limits of the frequency sweep, and different units can be selected through the input box.

➤ Sweep time

Press the soft key **【↕】** to make the cursor at the sweep time position and use the knob to rotate to obtain the desired sweep time. Sweep times range from 0.01s to 640s.

➤ Sweep direction

Press the soft key **【↕】** to make the cursor position in the sweep direction to choose from three directions: round-trip, increment and decrement.

➤ Sweep Mode

Press the soft key **【↕】** to make the cursor position in the sweep mode to select linear and logarithmic modes.

➤ Sweep on

Press the soft key **【ON】**, the instrument starts to sweep the frequency, and you can observe the frequency change on the display interface.

## (2) Sweep amplitude

---

Press **【Func】** soft key to select the sweep function.

➤ Sweep channel

When the cursor is on the voltage control channel, you can use the knob to switch the voltage control channel.

➤ Start amplitude and stop amplitude

Start amplitude and stop amplitude are the upper and lower amplitude limits of the amplitude sweep.

➤ Sweep time, sweep method, sweep mode

Please refer to "Sweep Time, Sweep Mode, Sweep Mode" in "Frequency Sweep".

➤ Turn on sweep amplitude

Press the soft key **【ON】**, the instrument starts sweeping, and you can observe the change of the amplitude on the display interface.

## (3) Sweep duty cycle

---

Press **【Func】** soft key to select the sweep function.

➤ Sweep duty cycle channel

The cursor is on the frequency sweep channel, and the knob can be used to switch the sweep duty cycle channel.

➤ Start duty cycle and stop duty cycle

The start duty cycle and the stop duty cycle are the upper and lower duty cycle limits of the duty sweep.

➤ Sweep time, sweep method, sweep mode

Please refer to "Sweep time, Sweep method, Sweep mode" in "Sweep frequency".

➤ Turn on sweep duty cycle

Press the **【ON】** soft key, the instrument starts to sweep the duty cycle, and you can observe the change of the duty cycle in the display interface.

## 4. Voltage control mode parameter settings

---

Press **【VCO】** and press **【Func】** soft key in the voltage control mode interface

to select the functions of frequency control, amplitude control and duty cycle control.  
The voltage control interface is shown in Figure 2-4-1 below.

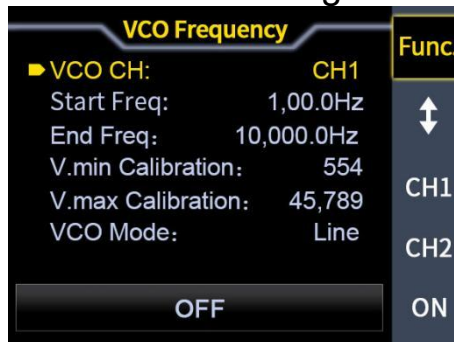


Figure 2-4-1 Pressure control interface

### (1) Voltage control frequency

In the voltage control interface, press soft key **【Func】** to select frequency control.

➤ Voltage control channel

As the cursor is on the voltage control channel, the knob can be used to switch the voltage control channel.

➤ Start frequency and stop frequency

Refer to "Start frequency and stop frequency" in "Sweep frequency".

➤ Minimum voltage calibration and maximum voltage calibration

The maximum and minimum values of the external input signal voltage can be calibrated. The minimum voltage calibration corresponds to the start frequency, and the maximum voltage calibration corresponds to the stop frequency.

➤ Voltage control mode

Press soft key **【↕】** to make the cursor in the position of voltage control mode to select linear and logarithmic mode.

➤ Turn on the voltage control frequency

Press the soft key **【ON】**, the instrument starts to control the frequency by voltage, and you can observe the change of the frequency on the display interface.

### (2) Voltage control amplitude

In the voltage control interface, press soft key **【Func】** to select amplitude control.

➤ Voltage control channel

As the cursor is on the voltage control channel, and the knob can be used to switch the voltage control channel.

➤ Start amplitude and stop amplitude

Refer to "Start and stop amplitude" in "Sweep amplitude".

➤ Minimum voltage calibration and maximum voltage calibration

The maximum and minimum values of the external input signal voltage can be calibrated. The minimum voltage calibration corresponds to the start amplitude, and the maximum voltage calibration corresponds to the stop amplitude.

➤ Voltage control mode

Press soft key **【↕】** to make the cursor in the position of voltage control mode to select linear and logarithmic mode.

➤ Turn on voltage control amplitude

Press the soft key **【ON】**, the instrument starts to voltage control the amplitude, you can observe the change of the amplitude on the display interface.

### (3) Voltage control duty cycle

---

In the voltage control interface, press soft key **【Func】** to select control duty.

➤ Voltage control channel

As the cursor is on the voltage control channel, and the knob can be used to switch the voltage control channel.

➤ Start duty cycle and stop duty cycle

Please refer to "Start duty cycle and stop duty cycle" in "Sweep duty cycle".

➤ Minimum voltage calibration and maximum voltage calibration

The maximum and minimum values of the external input signal voltage can be calibrated. The minimum voltage calibration corresponds to the starting duty cycle, and the maximum voltage calibration corresponds to the stop duty cycle.

➤ Voltage control mode

Press soft key **【↕】** to make the cursor in the position of voltage control mode to select linear and logarithmic mode.

➤ Turn on voltage control amplitude

Press the soft key **【ON】**, the instrument starts to control the duty cycle by voltage, and you can observe the change of the duty cycle on the display interface.

## 5.Measurement mode parameter settings

---

Press **【MEAS】**, and press **【Cnt】** and **【Meas】** soft keys in the measurement mode interface to perform the measurement function and the counter function.

Switching can also be performed by rotating the knob. The measurement interface is shown in Figure 2-5-1 below.

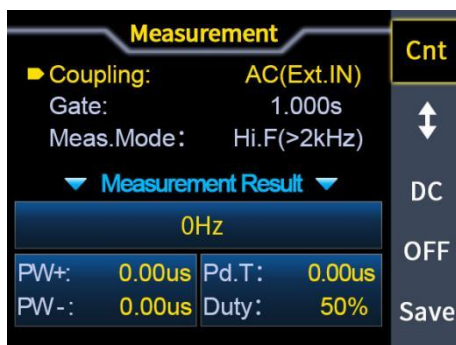


Figure 2-5-1 Measurement interface

## (1) Measurement function

The frequency, period, positive pulse width, negative pulse width, duty cycle and other parameters of the input signal can be measured. The measurement frequency range is 1Hz-100MHz, the measurement signal amplitude range is 2Vpp-20Vpp, and the input interface is Ext.IN.

### ➤ Coupling settings

Press the soft key **[↕]** to place the cursor at the coupling position, and adjust the knob to switch the coupling mode between AC (AC) or DC (DC).

### ➤ Gate time setting

Press the soft key **[↕]** to make the cursor at the position of the gate.

Use the **[InBox]** button to input the desired gate time in the input box.

The gate time range is 0.001s to 10s, the default is 1s.

### ➤ Measurement Mode

Press the soft key **[↕]** to place the cursor at the position of the measurement mode, and switch the measurement mode to low frequency (<2kHz) or high frequency (>2kHz) by adjusting the knob.

### ➤ Measurement parameters: frequency, period, positive pulse width, negative pulse width, duty cycle.

## (2) Counter function

The number of periods of the input signal can be calculated in real time, and the input signal amplitude range is 2Vpp-20Vpp.

### ➤ Coupling settings

Press the soft key **[↕]** to make the cursor at the coupling position, and switch the coupling mode between AC (AC) or DC (DC) by adjusting the knob.

### ➤ After setting all items, press **[▶]** soft key to start counter function, press **[||]** soft key to stop, press **[↶]** soft key to restore to default setting.

## 6.System settings

Press the **[SYS]** button to enter the system setting interface, and press the **[▲]**



▼ soft keys to select items such as clear memory, sound, brightness, language, built-in waveforms, arbitrary waveforms, waveform loading mode, and system information.

The system setting interface is shown in Figure 2-6-1 below.

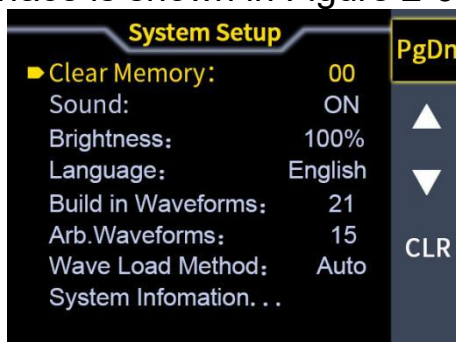


Figure 2-6-1 System interface

Clear memory: used to clear the parameters stored in the current position, rotate the knob to adjust to the specified position.

Sound setting: Press the **【On】** soft key to turn on the sound and press the **【Off】** soft key to turn off the sound.

Brightness adjustment: The numeric keys and knob can be used to quickly adjust the brightness.

Language setting: The knob can be used to select English and Chinese language.

Built-in waveforms: The numeric keys and knob can be used to set the number of built-in waves in the instrument, ranging from 00 to 21.

Arbitrary waveforms: The numeric keys and knob can be used to set the number of arbitrary waves of the instrument, ranging from 01 to 99.

Waveform loading mode: **【Auto】**, **【Fast】** can be used to select the waveform loading mode.

System information: Press the **【...】** soft key to view the product model, product serial number, hardware version, firmware version, and FPGA version of the instrument.

Press soft key **【PgDn】** to enter the second page of system settings.

Waveform synchronization: Soft keys **【ON】** and **【OFF】** can be used to turn waveform synchronization on and off. (When synchronizing, the CH1 channel is the operation object, and the parameters of the CH2 channel change with the change of the parameters of the CH1 channel.)

Frequency synchronization: Soft keys **【ON】** and **【OFF】** can be used to turn on and off frequency synchronization.

Amplitude synchronization: The soft keys **【ON】** and **【OFF】** can be used to turn on and off the amplitude synchronization.

Offset synchronization: Soft keys **【ON】** and **【OFF】** can be used to open and close the offset synchronization.

Duty cycle synchronization: Soft keys **【ON】** and **【OFF】** can be used to turn on and off duty cycle synchronization.

External synchronization: Soft keys **【ON】** and **【OFF】** can be used to turn on and off external synchronization.

Restoring factory settings: Press the soft key **【RUN】**, select **【RUN】** to restore the factory settings, and “Running...” is displayed in the information box, and the progress bar is full, which means the operation is successful.

Press soft key **【PgDn】** to enter the third page of system settings.

Auto Power On: The soft keys **【ON】** and **【OFF】** can be used to turn on and off the automatic power on. After the automatic power-on function is enabled, the instrument defaults to power-on output.

CH1 amplitude fine-adjusting: When there is a slight difference between the output amplitude of the CH1 channel waveform and the amplitude you measure, you can change the value of the CH1 amplitude fine-adjusting and perform online calibration to obtain an accurate amplitude. The default CH1 amplitude trim value is 50.

CH2 amplitude fine-adjusting: When the output amplitude of CH2 channel waveform is slightly different from the amplitude you measure, you can change the value of CH2 amplitude fine-adjusting and perform online calibration to obtain accurate amplitude. The default CH2 amplitude trim value is 50.

Help information: Rotate the knob or scan the QR code with your mobile phone to view related help information.



## 7.Introduction to the PC software

Communication protocol and software link:  
[http://68.168.132.244/JDS8000/Setup\\_EN.zip](http://68.168.132.244/JDS8000/Setup_EN.zip)

### (1) Install software

- Step 1: Click the button **【JDS8000 Setup】** to install the application, click the **【NEXT】** key\*4→ **【Install】** key\*1→ **【Finish】** key\*1 to complete the installation. The application installation interface is shown in Figure 2-7-1 to Figure 2-7-6 below.



Figure 2-7-1

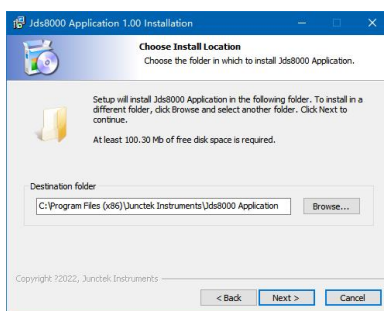


Figure 2-7-2

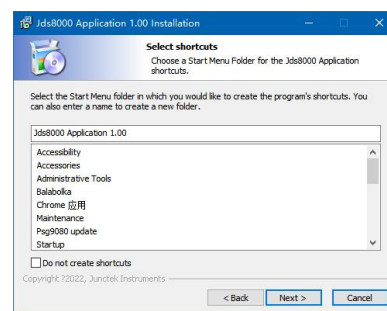


Figure 2-7-3

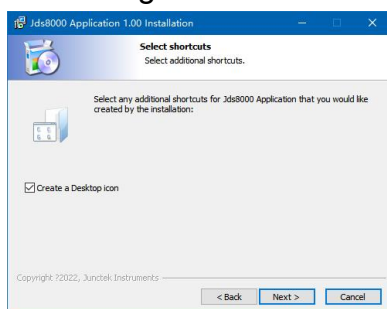


Figure 2-7-4

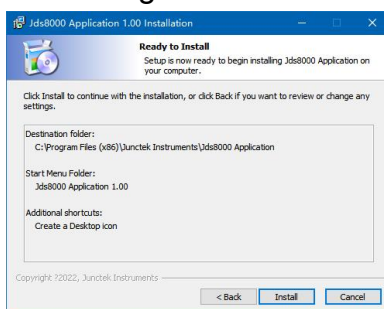


Figure 2-7-5

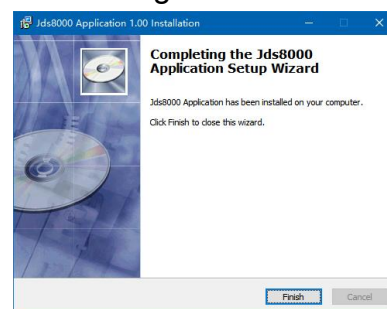


Figure 2-7-6

## (2) Connect to the computer

- Step 1: Right-click Computer-Properties-Device Manager-Observe the serial port assigned by the computer. The computer serial port allocation interface is shown in Figure 2-7-7 below.

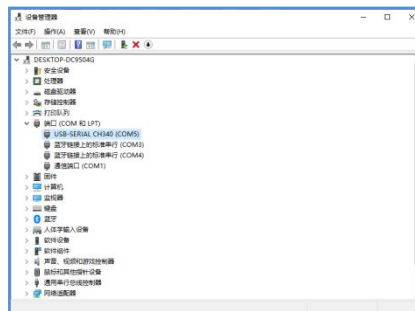


Figure 2-7-7

- Step 2: Open the serial port after selecting the corresponding serial port, and then select Connect. The Connect interface is shown in Figure 2-7-8 below.



Figure 2-7-8

- Step 3: The connection is successful. The successful connection interface is shown in Figure 2-7-9 below.



Figure 2-7-9



## 8. Brief introduction to Android Mobile APP

(1) APP download (to view the installation and operation demonstration video, please scan the QR code on the right)

Server download link: [http://68.168.132.244/JDS8000\\_APP.apk](http://68.168.132.244/JDS8000_APP.apk)

If you can't download it, please ask the customer service staff for the software.

## (2) Installation the APP software

This software only supports Android 5.0 and above systems. During the installation process, it will apply for the location service. Please agree and turn on the location service. The Bluetooth module cannot be plugged or unplugged as on power, which will cause damage. This manual corresponds to software version 1.2.1, and different versions may be slightly different. It is recommended to upgrade to the latest software for a better user experience. As shown in the following figure 2-8-1 installation step 1, 2-8-2 installation step 2, 2-8-3 installation step 3.

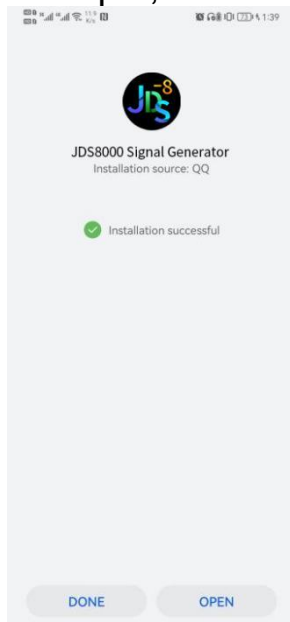
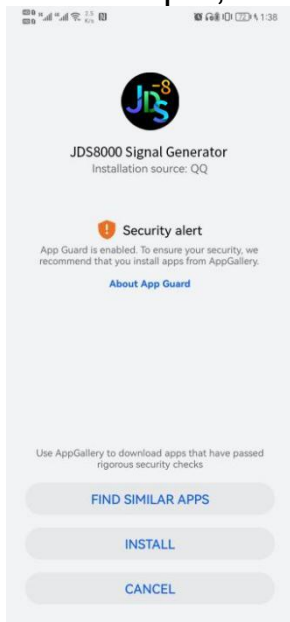


Figure 2-8-1 Installation Step 1    Figure 2-8-2 Installation Step 2    Figure 2-8-3 Installation Step 3

### (3) Software update

Click the APP icon, after the APP starts, the system will automatically detect whether the APP version has been updated, and the new version will pop up to remind you to update. The app downloaded from Google Play need to manually detect the new version.

### (4) APP interface display



Figure 2-8-4  
Main interface



Figure 2-8-5  
Modulation interface



Figure 2-8-6  
Measurement interface



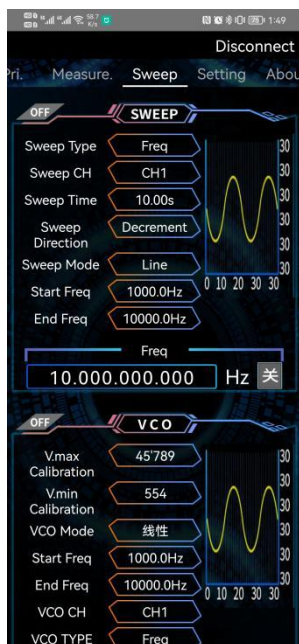


Figure 2-8-7

Sweep voltage control interface



Figure 2-8-8

System interface

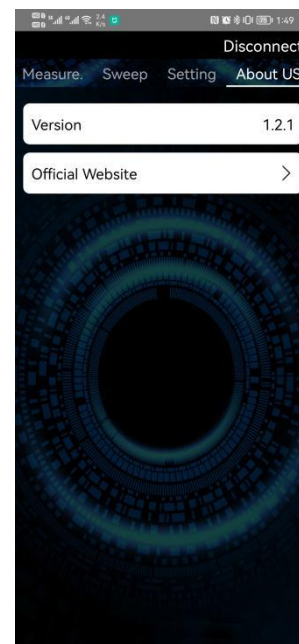


Figure 2-8-9

About us interface

## 9. Brief introduction to IOS Mobile APP



### (1) App download

Search for "JDS8000 Series Signal Generator" in the Apple Store to download.

### (2) Installation the APP software

The software only supports IOS9.0 and above systems. The first time the software connects to Bluetooth, it will access Bluetooth. Please agree to access. The Bluetooth module cannot be plugged or unplugged as on power, which will cause damage. This manual corresponds to software version 1.2, and different versions may be slightly different. It is recommended to upgrade to the latest software for a better user experience.

### (3) Software update

You can get the latest software from the Apple Store, and the IOS software version corresponding to the current manual is 1.2.

### (4) APP interface display



Figure 2-9-1  
Main interface



Figure 2-9-2  
Modulation interface



Figure 2-9-3  
Measurement interface



Figure 2-9-4  
Sweep voltage control interface



Figure 2-9-5  
System interface

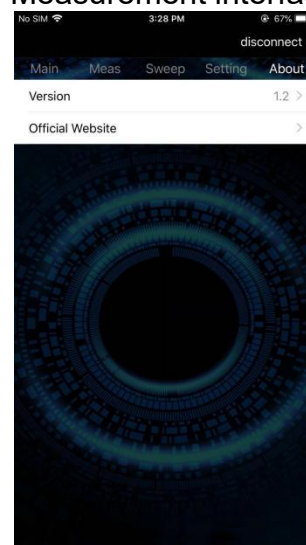


Figure 2-9-6  
About us interface

### III / Full names and abbreviations of the interface description

Abbreviation	Full name
PgDn	Page down
Type	Type
CNTR.	Counter
MEAS.	Measurement
FUNC	Function
Freq.	Frequency
Ampl.	Amplitude
Offset	Offset
Duty	Duty cycle
Wave	Waveform
Phase	Phase
AM	Amplitude modulation



FM	Frequency modulation
PM	Phase modulation
ASK	Amplitude-shift keying
FSK	Frequency-shift keying
PSK	Phase-shift keying
Source	Signal source
Shape	Modulation waveform
M.Freq	Modulation frequency
Depth	Modulation depth
FM.Dev	Frequency deviation
PM.Dev	Phase deviation
Hop.F	Frequency hopping
Rate	Rate
W.Inv	Wave inverse
Width	Pulse width
Period	Period
Pulse	Pulse
Burst	Burst
Idle	Idle
T.Src	Trigger source
Trig.	Trigger
Num.	Number of pulses
MEAS.	Measurement
CNTR.	Counter
ON	On
OFF	Off
RST	Reset
SAVE	Save
Auto	Automatic
Fast	Fast
About	About
Update	Update
PgDn	Page down
RUN	Run
Yes	Yes
SAVE	Save